

WHAT IS CLAIMED IS:

1. A device for determining the filling level of a filling material in a container, the material defining a surface in the container, comprising:

a signal-generating unit for generating measuring signals;

an input coupling unit adapted to receive the generated measuring signals;

an antenna connected to said input coupling unit and having at least one first dielectric layer containing a feed structure and a plurality of cutouts, with a number of said plurality of cutouts having at least one of different dimensions and shapes; and

a receiving/evaluating circuit adapted to receive the generated measuring signals subsequent to being reflected from the surface defined by the filling material, wherein:

said input coupling unit coupling the generated measuring signals onto the antenna, said antenna then emitting measuring signals in the direction of the surface defined by the filling material,

in assembly with the container, said at least one dielectric layer is arranged so that said plurality of cutouts face the surface defined by the filling material and said feed structure face away from the surface defined by the filling material, and

the measured signals received by the receiving/evaluating circuit are used by said receiving/evaluating circuit to determine the filling level in the container of the filling material via the propagating time of the measured signals.

2. The device as defined in claim 1, wherein said cutouts form slot-shaped recesses, and wherein each cutout defines a longitudinal axis which are aligned substantially radially.

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3. The device as defined in claim 1, wherein said dielectric layer defines a center with one group of said cutouts arranged at approximately a first radius from the center of said dielectric layer, and at least one further group of said cutouts arranged at approximately a second radius from the center of said dielectric layer.

4. The device as defined in claim 3, wherein said cutouts of said at least one further group of said cutouts are spaced from said cutouts of said first group.

5. The device as defined in claim 1, wherein said cutouts are configured as rectangular slots the dimensions of which vary in the range from  $0.8 \times a$  to  $1.2 \times a$  or  $0.8 \times b$  to  $1.2 \times b$ , where  $a$  is the length and  $b$  is the width of a slot.

6. The device as defined in claim 1, further comprising:  
a dielectric protective layer connected to said at least one dielectric layer on the side containing said cutouts.

7. The device as defined in claims 6, wherein said cutouts and said feed structure are applied to said at least one dielectric layer by etching.

8. The device as defined in claim 6, wherein at least one of said at least one dielectric layer and said dielectric protective layer comprise a circular disk.

9. The device as defined in claim 1, wherein the measuring signals comprise broadband measuring signals.

10. The device as defined in claim 1, wherein said antenna and its cutouts cooperate such that said antenna essentially emits measuring signals of a selected mode.